National Institute of Environmental Health Sciences

Diurnal temperature range is a risk factor for coronary heart disease death

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Abstract:

Background: Although the relation between day-to-day temperature change and coronary heart disease (CHD) mortality is well established, it is unknown whether temperature variation within 1 day, ie, diurnal temperature range (DTR), is an independent risk factor for acute CHD death. Methods: We used time-series and case-crossover approaches to assess the relation between DTR and daily CHD mortality between 2001 and 2004 in Shanghai, China. Specifically, we used exposures averaged over periods varying from I to 5 days to assess the effects of DTR on CHD mortality. We estimated the percent increase in the number of daily deaths related to CHD that were associated with DTR, after adjustment for daily meteorologic conditions (temperature and relative humidity) and levels of outdoor air pollutants. Results: Both time-series and case-crossover analyses showed that DTR was significantly associated with the number of daily deaths related to CHD. A 1 degrees C increase in 2-day lagged DTR corresponded to a 2.46% (95% CI, 1.76% to 3.16%) increase in CHD mortality on time-series analysis, a 3.21% (95% CI, 2.23% to 4.19%) increase on unidirectional case-crossover analysis, and a 2.13% (95% CI, 1.04% to 3.22%) increase on bidirectional case-crossover analysis. Conclusions: Our findings suggest that DTR is an independent risk factor for acute CHD death.

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Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Air Pollution, Meteorological Factors, Temperature

Air Pollution: Ozone, Particulate Matter, Other Air Pollution

Air Pollution (other): NO2;SO2

Temperature: Fluctuations

Geographic Feature:

resource focuses on specific type of geography

Urban

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Asia

Asian Region/Country: China

Health Impact:

specification of health effect or disease related to climate change exposure

Cardiovascular Effect, Developmental Effect

Cardiovascular Effect: Other Cardiovascular Effect

Cardiovascular Disease (other): congenital heart defect mortality

Developmental Effect: Reproductive

Resource Type:

format or standard characteristic of resource

Research Article

Timescale:

time period studied

Time Scale Unspecified